UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
THE MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS

BULLETIN 1163-C
PLATE 1

EXPLANATION

Recent

Qs — Swamp deposits
Organic matter generally mixed with fine sand and silt; locally peaty

Qal — Alluvium
Deposits of gravel, sand, silt, and clay; chiefly found in areas occasionally flooded by modern streams and at times of high water in swamps and bogs

Pleistocene — *Carry(?) Stade of Wisconsin Glaciation*

Qk Qku Qkm Qkl Qkp Qkt Qktu Qktm Qktl Qic Qvt Qgf Qgfu Qgfl — Glaciofluvial deposits
Letters (u, upper; m, middle; l, lower) differentiate adjacent glaciofluvial deposits of similar morphology
Qk, *kame deposits; areas of knobby or conical hills composed of sand and gravel deposited in low places or holes in the ice and around blocks of ice, or the result of collapse after deposition on ice*
Qkp, *kame plains; flat-topped hills of sand and gravel of fluvial or deltaic origin bounded or nearly bounded by ice-contact slopes*
Qkt, *kame-terrace deposits; terrace forms built by glacial streams between an ice mass and higher ground; composed of relatively coarse sand and pebble to boulder gravel*
Qic, *ice-channel fillings; narrow ridges of sand and gravel deposited as eskers or crevasse fillings on, in, and under the ice*
Qvt, *valley trains; fine-grained well-bedded sand and gravel in Millers River valley deposited as valley fill by melt-water streams*
Qgf, *undivided glaciofluvial deposits; irregular landforms and areas of sand and gravel morphologically not distinct enough to map by origin*

Qgm — Ground moraine
Relatively thin till; a poorly sorted material consisting of silt, sand, pebbles, cobbles, and boulders in any proportion; some thin sand and gravel lenses are included

QUATERNARY

PRE-QUATERNARY

Bedrock outcrops
Nearly continuous rock exposures are shown in solid color; line pattern indicates areas of numerous small scattered exposures or where bedrock is very near the surface and controls the topography

af — Artificial fill

Contact
Dashed where approximately located

Sand and gravel pit

Melt-water channel
Arrow indicates direction of flow

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Base by U.S. Geological Survey, 1954

Geology by D. F. Eschman, 1952–55

SURFICIAL GEOLOGIC MAP OF THE ATHOL QUADRANGLE, MASSACHUSETTS

SCALE 1:24 000

1 ½ 0 1 MILE

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

14½° MAGNETIC NORTH — TRUE NORTH
APPROXIMATE MEAN DECLINATION, 1966